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Route To:

Subject: Insect and Disease Conditions and Silvicultural Recommendations (pecoslasvegasrd)

To: District Ranger, Pecos-Las Vegas RD, Attn: Ken Reese

This letter provides a summary of insect and disease conditions in your planned silvicultural prescription stand, based on our walk-through on November 1. I've also included some suggestions for reducing insect and disease impacts and improving overall stand conditions (health). The stand is located on the east slope of the Sangre de Cristo Mountains, in the upper portion of the Tecolote watershed.

This is a multi-storied mixed conifer stand on granitic soils with low to moderate productivity (estimated site index of 60 to 75 throughout). It was selectively harvested around 40 to 50 years ago and has seen little or no management since. Densities generally range from 100 to 150 ft^2/acre, except in the northwest corner, which is more open. Douglas-fir and white fir are the most abundant conifer species, although there is a significant component of ponderosa pine throughout most of the area. Southwestern white pine is common in the northwest corner of the stand and occurs occasionally elsewhere. Aspen clones occur in limited portions of the stand, intermixed with the conifers.

Insect and disease activity. A variety of insect and disease activity was observed in this stand, including several bark beetles, dwarf mistletoe, and root disease. The most abundant and probably the most damaging agent here is Douglas-fir dwarf mistletoe (*Arceuthobium douglasii*), which occurs throughout much of the stand. This disease is especially severe in the eastern portion, where most of the host trees are heavily infected. Disease incidence generally decreases in the western portion, where the parasite becomes more "patchy" in distribution. We found a rare infection of this dwarf mistletoe on white fir near the eastern edge of the stand.

Douglas-fir bark beetles (*Dendroctonus pseudotsugae*) have attacked and killed several small groups of mature Douglas-fir in the past year or two. Most (although not all) of this mortality occurred among trees with heavy mistletoe infection. Lesser amounts of western pine beetle (*Dendroctonus brevicomis*) and fir engraver beetle (*Scolytus ventralis*) activity were observed in ponderosa pine and white fir, respectively. We found galleries and/or adult beetles of each of these three bark beetle species.

Armillaria root disease is relatively common in this stand, as evidenced by the "mycelial fans" found at the base of several recently killed trees. Signs of Armillaria were detected on all three of the major conifer species in this stand. The occasional windthrow found in this stand may be related to the fairly high incidence of root disease here. Trees severely stressed by root disease and/or dwarf mistletoe may be more likely to suffer from attack by bark beetles, although drought stress is most often the overriding factor leading to attack.

Diseases observed on aspen in this stand include trunk rot (*Phellinus tremulae*), and sooty bark canker (*Encoelia pruinosa*). Both of these fungal diseases are very common in mature aspen clones in the southwest.

Management suggestions. From a silvicultural perspective, this is an appealing stand to manage (i.e., thin) because it contains a significant (and healthy) component of ponderosa pine nearly throughout. Removal of Douglas-fir and white fir could greatly increase the overall proportion of pine in this stand, countering the typical conversion to shade-tolerant species. From an insect and disease perspective, this would represent reductions in the long-term impacts of both the Douglas fir dwarf mistletoe and western spruce budworm (the latter a potential threat).

The severity of the Douglas-fir dwarf mistletoe is problematic and may be difficult to address, at least in the eastern part of the stand. Removal of a good proportion of the infected trees would tend to reduce fire hazard. Favoring "non host" species — ponderosa pine, white fir, and white pine (where present) — may be the most reasonable option. On the other hand, retention of some of the larger, heavily infected trees may actually be beneficial from a wildlife perspective.

Any significant reduction in density (basal area) here should reduce bark beetle susceptibility. Reductions to around 60 to 80 ft^2 would be recommended for a mixed conifer stand of this type. While fresh pine slash can serve as a breeding material for ips bark beetles, slash from Douglas-fir and white fir poses little or no beetle threat.

Retention of all (or at least most) of the white pines in this stand is recommended; efforts are underway both regionally and nationally to promote white pines. Prudent thinning of this stand could benefit these relatively shade-intolerant trees. Note that blister rust "hazard" appears to be quite low here (and in most other parts of northern New Mexico).

Thinning this stand, while potentially beneficial in most respects, would tend to increase the incidence of root disease, because the stumps and attached root systems would provide a "food base" for the fungus. Limited research indicates that larger stumps provide the greatest threat.

Please contact me if you have any questions about this evaluation or need additional information.

/s/ David A. Conklin
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cc: Debra Allen-Reid, Leonard Lucero, Regis J Cassidy, Mailroom R3 Santa Fe, Kenneth Reese